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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,971	11/16/2001	Mitsuhiro Nishida	K-2020	7874

7590 08/19/2002

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EXAMINER	
PIZIALI, ANDREW T	

ART UNIT	PAPER NUMBER
1775	4

DATE MAILED: 08/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MN-4

Office Action Summary	Application No.	Applicant(s)	
	09/987,971	NISHIDA ET AL.	
	Examiner	Art Unit	
	Andrew T Piziali	1775	

-- Th MAILING DATE of this communication appears on the cover sh et with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 8-10 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification discloses that the high refractive index layer may have a refractive index of 1.65 or more, preferably of 1.66 to 1.85, and a low refractive index layer having a refractive index of 1.35 to 1.55 (page 6, lines 4-9), but fails to describe a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make a high refractive index layer having a refractive index of 1.65 or more, a high refractive index layer having a refractive index of 1.66 to 1.85, or a low refractive index layer having a refractive index of 1.35 to 1.55.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,925,438 to Ota et al (hereinafter referred to as Ota) in view of USPN 5,665,422 to Endo et al. (hereinafter referred to as Endo).

Regarding claims 1-11, Ota discloses an antireflection film, suitable for use in a liquid crystal display or a window glass for automobiles (column 1, lines 4-12), comprising an organic film, a hard-coating layer, a high refractive index layer, and a low refractive index layer (paragraph bridging columns 2 and 3, Figure 3). Ota discloses that the high refractive index layer may comprise a resin with fine particles dispersed therein (column 8, lines 16-22). Ota discloses that the particles that may be dispersed in the resin include TiO_2, SnO_2, and ITO (column 8, lines 36-46).

Ota fails to specifically mention the use of two different particles dispersed in the resin, but Endo discloses an antireflection film, suitable for use in a liquid crystal display or in a window glass for automobiles (column 3, lines 61-67), comprising an organic film (column 9, lines 23-35), a high refractive index layer including at least two kinds of metal oxide particles, the specific example was TiO_2 and SnO_2 (or the like) particles (paragraph bridging columns 8 and 9), and a low refractive index layer (paragraph bridging columns 8 and 9, and column 14, lines 43-60). Endo discloses that by producing a high refractive index layer with two different metal oxides the high refractive index layer can be formed with excellent light-transmitting properties as well as high electrical conductivity (paragraph bridging column 8 and 9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include both TiO_2 particles and SnO_2 particles in the high refractive index layer of Ota, as disclosed by Endo, because in combination the two particles provide the layer with excellent

light-transmitting properties and high electrical conductivity, properties desired in some antireflection film applications.

Regarding claim 3, Endo discloses that the high refractive index layer may comprise metal oxides such as SnO_2, TiO_2, or ITO (In_2O_3+5 wt% SnO_2) (paragraph bridging columns 8 and 9) and discloses that the high refractive index layer may comprise TiO_2 particles in an admixture with SnO_2 particles or the like (column 9, lines 15-21). Endo discloses that the SnO_2 particles are present to provide the high refractive index layer with electrical conductivity properties (column 9, lines 15-21).

Considering that ITO, like SnO_2, is a high refractive index electrically conductive material, and considering that Endo specifically discloses that ITO particles may be used in the high refractive index layer (column 9, lines 1-6), it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the high refractive index layer of Ota from an admixture of TiO_2 and ITO particles, as disclosed by Endo, because the admixture would provide the high refractive index layer with excellent light-transmitting properties and high electrical conductivity, both properties desired in some plasma display or glass applications.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the electrically conductive particles from any suitable high refractive index electrically conductive material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of design choice. ***In re Leshin*, 125 USPQ 416.**

Regarding claim 4, Endo does not mention the specific volume percentage of the particles of TiO_2 to the total volume of the particles of TiO_2 and the particles of ITO, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the volume percentages of TiO_2 and ITO particles to acquire a high refractive index layer with the desired light transmitting and electrical conductivity properties for the intended application. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. ***In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).**

Regarding claim 6, Ota discloses that the type and amount of particles and resin may be changed so that the refractive index is in the range of 1.50 to 2.30 (column 8, lines 47-54). Ota does not mention specific volume percentages of metal oxide particles to the total volume of metal oxide particles and resin, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the volume percentages, to result in the desired refractive index, because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 7, Ota does not mention the surface resistance of the antireflection film, but considering the substantially identical antireflection film of Ota in view of Endo, compared to the applicants' antireflection film, it appears that the antireflection film of Ota in view of Endo would possess a surface resistance of $5x10^{12}$ $\Omega/$, as claimed by the applicants.

The Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on

inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

Regarding claims 8-10, Ota discloses that it is preferable that the high refractive index layer be formed with a refractive index in the range of 1.50 to 2.30 (column 8, lines 47-65) and that the low refractive index layer be formed with a refractive index in the range of 1.38 to 1.46 (column 5, lines 10-15).

Regarding claim 11, Ota discloses that the resin in the high refractive index layer may be polystyrene (column 8, lines 23-35).

5. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,665,422 to Endo in view of USPN 5,925,438 to Ota.

Regarding claims 1-11, Endo discloses an antireflection film, suitable for use in a liquid crystal display or in a window glass for automobiles (column 3, lines 61-67), comprising an organic film (column 9, lines 23-35), a high refractive index layer including at least two kinds of metal oxide particles, such as SnO_2 and TiO_2 (paragraph bridging columns 8 and 9), and a low refractive index layer (paragraph bridging columns 8 and 9 and column 14, lines 43-60). Endo fails to mention the use of a hard-coating layer, but Ota discloses an antireflection film, suitable for use in a liquid crystal display or a window glass for automobiles (column 1, lines 4-12), comprising an organic film, a hard-coating layer to provide abrasion resistance, a high refractive index layer, and a low refractive index layer (paragraph bridging columns 2 and 3, Figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was

made to include a hard-coating layer, as disclosed by Ota, in the antireflection film of Endo, because the hard-coating layer provides abrasion resistance for the substrate.

Regarding claim 3, Endo discloses that the high refractive index layer may comprise metal oxides such as SnO_2, TiO_2, or ITO (In_2O_3+5 wt% SnO_2) (paragraph bridging columns 8 and 9) and discloses that the high refractive index layer may comprise TiO_2 particles in an admixture with SnO_2 particles or the like (column 9, lines 15-21). Endo discloses that the SnO_2 particles are present to provide the high refractive index layer with electrical conductivity properties (column 9, lines 15-21).

Considering that ITO, like SnO_2, is a high refractive index electrically conductive material, and considering that Endo specifically discloses that ITO particles may be used in the high refractive index layer (column 9, lines 1-6), it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the high refractive index layer of Endo from an admixture of TiO_2 and ITO particles, because the admixture would provide the high refractive index layer with excellent light-transmitting properties and high electrical conductivity, both properties desired in some plasma display or glass applications.

Regarding claim 4, Endo does not mention the specific volume percentage of the particles of TiO_2 to the total volume of the particles of TiO_2 and the particles of ITO, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the volume percentages of TiO_2 and ITO particles to acquire a high refractive index layer with the desired light transmitting and electrical conductivity properties for the intended application.

Regarding claim 6, Endo discloses that the high refractive index layer comprises synthetic resin as a result of the synthetic resin of the low refractive index layer flowing down into the high refractive index layer (paragraph bridging column 7 and 8 and Figure 7).

Regarding claim 7, Endo does not mention the surface resistance of the antireflection film, but considering the substantially identical antireflection film of Endo in view of Ota, compared to the applicants' antireflection film, it appears that the antireflection film of Endo in view of Ota would possess a surface resistance of $5x10^{12}$ Ω/ , as claimed by the applicants.

Regarding claims 8-10, Endo discloses that the high refractive index layer may comprise TiO_2 particles in an admixture with SnO_2 particles or the like (paragraph bridging column 8 and 9). Endo also discloses that the low refractive index layer may comprise SiO_2 (column 8, lines 30-39). Endo does not mention the specific refractive indices of the high and low refractive index layers, but considering the substantially identical compositions of the layers, compared to the high and low refractive layer disclosed by the applicants, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the volume percentages of resin, TiO_2 particles, and ITO particles (or the like) to acquire a high refractive index layer with the desired refractive index for the intended application.

Regarding claim 11, Endo discloses that the resin in the high refractive index layer may be an acrylic resin (column 6, lines 17-23).

Conclusion

6. The following patents are cited to further show the state of the art with respect to hard-coating layers:

USPN 6,329,041 to Tsuchiya et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Piziali whose telephone number is (703) 306-0145. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (703) 308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-5665.

Andrew T Piziali
Examiner
Art Unit 1775

atp
August 12, 2002

DEBORAH JONES
SUPERVISORY PATENT EXAMINER